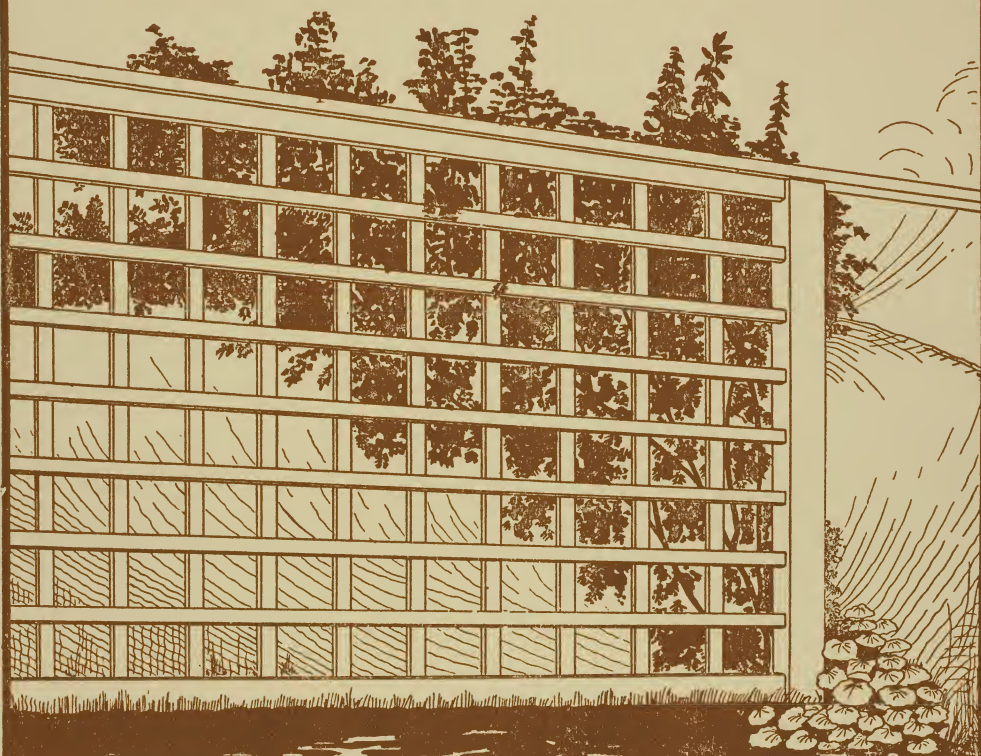


California Garden



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JULY, 1922

TEN CENTS



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The California Garden

*Published Monthly by the San Diego Floral Association
One Dollar per Year, Ten Cents per Copy*

Vol. 13

POINT LOMA, CALIFORNIA, JULY, 1922

No. 13

HOW LONG CAN A SEED LIVE?

Missouri Botanical Garden Bulletin, Vol. X. No. 3,
March, 1922.

Probably no question concerned with plants has had so many contradictory and inaccurate answers as that dealing with the length of time a seed may retain its vitality. The wide circulation of such fables as the supposed germination of "mummy wheat" has left the impression in the mind of the general public at least, that there is practically no limitation to the persistence of life when it is once enclosed in the seed-coats of a plant. The origin of this myth seems to be that about the year 1840, a dozen grains of wheat were sent to England with the statement that they had been taken from a vase found in one of the ancient tombs which contained a mummy. These seeds were sown, and one plant was said to have been raised which bore two poor ears. Just where the mistake occurred cannot be stated, but there is no doubt that the grain which germinated either never came from Egypt or was of recent origin and had not been buried for centuries. Wheat and other seeds frequently have been found in ancient Egyptian tombs, but a microscopic examination of such grain invariably shows that the embryo has acquired a brownish color and is practically destroyed. In no case would it be possible for it to germinate. Actual experiments have proved that out of 750 seeds of wheat stored under ideal conditions for 16 years only 8 per cent sprouted, and by the time the seed was from 30 to 35 years old no germination would take place.

Within the past year or two the daily press has given considerable space to the reported germination of morning-glory seed found in the hand of a mummy. While the accounts vary, in some cases the seed being reported as that of an Egyptian pea, they are more or less in agreement in stating that the Secretary for the Society of Bibliographical Archaeology of London brought from Egypt to England 12 seeds (the same number as in the original mummy wheat story) found in the hand of a mummy of a young girl which was excavated from a tomb and reputed to be nearly 5000 years old. All the seed germinated, and when the plants matured blue

morning glories (or sweet peas) "looking like a tiny Egyptian face" were produced.

Unfortunately, efforts to verify the actual conditions under which the seed was found have failed and, for the present at least, the case will have to be classed with still another one where the seeds of oats were supposed to have germinated after removal from a mummy case 2600 years old. The particular mummy was one presented to John MacGregor, about 1870, by the Khedive of Egypt. When the mummy reached England the case was opened in the presence of creditable witnesses and in the dust at the bottom 4 oat seeds were found. Two of these were sown by MacGregor and two turned over to the Royal Botanic Society of London for planting. All four seeds germinated and because of the care with which the mummy case had been opened and the connection of the Royal Botanic Society with the growing of the seedlings, the case was regarded as absolutely authentic. While it seemed odd that only four seeds were found and that these were precisely similar to varieties then in cultivation, no doubt was cast upon the truth of the incident until a long time afterward. It then developed that this identical mummy had been stored with others in the stables of the Khedive where fodder, including oats, was kept for the horses. The Khedive was in the habit of keeping on hand in his stables a stock of these most interesting products of his country, so that they would be ready at any time to present to distinguished visitors. It was shown that the dry air of the stable, together with rough usage, either warped and split the wood of the case or caused the clay luting which joined the two halves of the case to fall out, thus forming an opening through which the oats filtered in. There is no doubt that, for the purpose of deceiving credulous tourists, modern wheat or oats grains appropriately stained have sometimes been mixed with wheat taken from ancient vases and mummy cases and sold as "mummy wheat". Genuine vases, apparently unopened, but containing such grains, are also occasionally sold to travelers.

While the power which many seeds and spores possess, that of retaining their vitality under the most adverse conditions, is one of the most interesting phenomena connected with plant life, it is only recently that there has been made available any trustworthy data upon the maximum life of a seed. In 1907, Becquerel tested the germination of about 500 kinds of seed which had been preserved in the Natural History Museum of Paris. The age of these seeds could be definitely determined, varying from 25 to 135 years, but the oldest seed (*Cassia bicapsularis*) which Becquerel succeeded in germinating was 87 years old. In the following year Ewart published a list of over 4000 varieties of seed which had been germinated after varying lengths of time. About 600 species recorded by Ewart were from seed which had been sent out from Kew 40 years before for a projected botanical garden at Melbourne, but were locked up in a cupboard and forgotten. As the result of the investigations of these two workers, it was possible to make a significant generalization about the type of seed which show extreme longevity, namely, that all had exceptionally strong and impermeable coverings. Not only are coats of such seed impervious to air, but they are likewise impermeable to dry alcohol, ether, chloroform, and similar substances. These hermetically sealed seeds, therefore, are able to live longer because of protection from external influence.

Some seeds retain their vitality but a few days. Others, if properly preserved, will germinate after years and possibly, in rare cases, a century or more may pass before they are lifeless. In any case a fundamental question concerning the state of the living matter in a dormant seed remains to be answered. Are vital processes slowly but continuously going on within a seed or is everything at a standstill? Originally it was believed because seed could be immersed in various toxic substances or kept in a vacuum for a year or two without loss of vitality, that there could be no gaseous exchange between the contents of the seed and the outside. Some investigators contended that respiration, that is, taking in of oxygen and giving out of carbon dioxide, continually takes place in dry seed just as it is carried on in living plants and animals. Certain experiments seem to prove that seeds can exist for a considerable time without any gaseous exchange with the outside world since their walls have become absolutely airtight. Hence, if there are any changes going on, each cell must be living on its own supplies, and the life of the seed is necessarily limited to the length of time required to use up such a source of energy. If, on the other hand, a dried seed has really entered into a state of "static equilibrium" in which no change whatever takes place, it should be capable of retaining its vitality indefinitely.

Becquerel has inaugurated an experiment which some day may answer the question,

but unfortunately we cannot anticipate an answer within this century, since time alone can be the test. He has prepared seed by perforating their outer coats and drying them completely, after which they were placed in a high vacuum and deposited with the Bureau of Standards in Paris. They are to be tested every 10 years, and ultimately we may know how nearly seeds are immortal.

Since plants unquestionably have appeared in regions where they were previously unknown, after the soil had been opened up by digging or dredging, it was concluded that the seed must have been preserved alive for very long periods, because buried more or less deeply in the earth. Of course there has never been adequate supervision of such cases, and invariably it has been found that the plants recorded as appearing under such conditions do not have particularly long-lived seed, at least when preserved in air. Rather extensive experiments have further demonstrated that it is not true that seeds preserve their vitality longer if buried in the soil, but that they will keep much better in air if perfectly dry.

The appearance of unusual plants in regions cleared by forest fires has been regarded as another evidence of the extreme viability of seed. While it is true that some seed which have lain dormant in the earth for a considerable length of time may be germinated through the heating of the ground, there is no authority for the idea that plants originating under such circumstances have come from seed which have lain in the soil an extraordinary length of time. The possibility of their being carried by birds or other animals, or by wind or flood, cannot be disregarded.

Pine seeds are notoriously long-lived. Some trees, such as *Pinus attenuata* and *P. radiata*, 30 to 40 years old, may still retain unopened all the cones they have produced. In such cases the cones may not shed their seeds until the tree or branch that bears them die. In 1874 Dr. Engelmann collected a branch of *P. contorta* from Colorado and after keeping it in St. Louis for 4½ years, he sent it to Professor Sargent of the Arnold Arboretum to test the seeds. The result showed that at least some seeds of this species are capable of germination after retention in the cones for 10 years, and experiments conducted in the seed laboratory of the United States Department of Agriculture demonstrated that seeds of this same pine 30 years of age were still capable of germination.

All investigators are agreed that the viability of ordinarily dried seed is quite unaffected by exposure to extreme cold. What was regarded as a most remarkable fact at the time was the finding in January, 1899, by some members of the Peary Arctic Expedition, of seed abandoned by Lieutenant Greely 18 years before, and which during this period had been exposed to a winter tem-

perature of from 60 to 70 degrees below zero. Twenty-three years after these seeds were harvested some of them germinated, and this demonstration of the ability of seed to withstand low temperature was cited as one which would not likely be again repeated. Since that time seeds have been exposed to the temperature of liquid hydrogen (-250 degrees C.) without deleterious results. Some contend that this proves the seed must necessarily be in a state of static equilibrium, since all chemical change must be in abeyance with such extreme cold. On the other hand, it is believed by many that any change would be indefinitely retarded by the low temperature.

Plants resort to various expedients to prevent their means of perpetuation through seed being destroyed by heat or drought or excessive moisture. As a general rule, the thinner and more permeable the seed-coat the shorter-lived the seed, although sometimes the seed-coat may be relatively thin and yet quite impervious to moisture, as in the case of the garden pea. Again, the long life of the seed may be due to the excessively hard or the abnormally thickened seed-coat, and germination may not take place for several years after the seed has been exposed to favorable conditions. To the farmer or gardener delayed germination is a nuisance, since he desires all seed to germinate promptly and those of the same kind to appear at approximately the same time. Clover is a good example of a plant which produces seed with coats of varying thickness, so that from a single plant the so-called "hard" seed may germinate weeks or even months after the others. At one time a machine was devised which by means of an air blast, forced the clover seed against rough iron plates, and these, by scratching the seed-coats, rendered them all equally permeable to moisture, and germination was more or less simultaneous. Still another method has been to submerge hard-coated seeds in strong acid, certain kinds being capable of standing this treatment for several hours without injury. Germination is thus secured within a reasonable length of time instead of requiring years.

An interesting instance of the adaptability of plants to meet special conditions is found in *Nelumbium speciosum*, the sacred lily of India, the seed of which, if sown as soon as ripe, germinate under water in less than a month. Should the seed once get hard by being removed from the water, it is almost impossible to break it, so that years may pass without germination unless the coat has been scratched or filed. When this is done, however, and moisture admitted, they will germinate within 24 hours. The value to the plant of such a seed is that, should the pond in which it is growing dry up and the seed fail to fall into water, it can lie dormant awaiting a return to its natural aquatic habitat. It is interesting to note in this connection that seed of *Nelumbium* have retained

their vitality for the longest period authentically determined thus far. Robert Brown, an English botanist of the early part of the nineteenth century, records that seeds of *Nelumbium* were sent by Sloan to the botanical department of the British Museum. A hundred and fifty years afterwards he found them in the original boxes in which they had been transmitted. Brown himself succeeded in germinating these seed, and there seems no reason to doubt the accuracy of his account. At the present time this stands as the record for the longevity of seed, and, owing to the nature of the *Nelumbium* seed, it is reasonable to suppose that they might retain their viability for such a period. However, in the case of wheat and similar seed supposed to have lived thousands of years, no credence is to be attached to the sensational assertions as to their longevity.

WATERING PLANTS

Recently I planted a *Bougainvillea* for a friend, and remarked that it would thrive on very little water. That is true, but not the whole truth, which I should have told her. The whole truth concerning Drouth Resisting plants is about as follows—when they are grown in pots either from seeds or from cuttings and planted out to permanent position, they must receive the same care as any other sort of vegetation. They must be watered as often, and as carefully, and receive the same attention until the roots go into the soil surrounding them. Now the difference between a baby plant grown from seed in the place where it is to remain, and one grown from seed which is to be transplanted or from a cutting is this: in the first instance the root goes on down into the subsoil; three to four times the length of the part above ground, and because of that fact it is prepared to care for itself when rains cease, and the sun beats fierce and hot on its head. Such is not the case with a transplanted seedling. The tap root is broken in the operation of removal from seed bed to "flat" or to pot, and the natural process of development is interrupted, and the artificial life is begun. Now this disturbed natural method of growing must be supplemented by artificial means if the transplanting is to be a success. Rooted cuttings have no tap root. I knew all this, but was like the boy who was sent to the store for a small bill of goods. That was in the days when credit was the custom. After the lad had been served, the merchant said, "who shall I charge this to." The youngster, in all his innocent simplicity, said, "too my dad". Well, but who is your dad. Why don't you know my dad? I know him just as easy as anything," and darted out of the store.

I know it just as easy as anything, and, like the boy, thought the woman ought to know the same thing too, and quite as easy.

That is where we fellows who have gone through the school of experience, come short of our privilege of educating our less fortunate fellows in the art of gardening. We take too much for granted, then become peevish when some amateur fails in the elementary part of the work.

Now then let us get back to the principle which controls wild plant life in an arid country. When the seedlings start on their career, as previously remarked, the tap root is unbroken and goes on down into the moist earth, and keeps on going down as much as sixty feet or more, and that is one reason why they can stand a prolonged drouth. Keep this thought in mind always and ever, that the Creator of all this, had in mind the thought, when He made these plants for arid regions to provide them with the ability to live just that sort of hardy life, and whenever we begin to interfere with such sort of ordained existence, death is sure to overtake the victim of our ignorance or our folly.

Bougainvilleas when once established in deep rich soil in this Southland will live and do well with one watering during our long dry summers. To be sure the growth will not be so luxuriant as if given water, but the flowers will be quite as brilliant, and as abundant as where the growth of vine is more vigorous.

Well, what happened to the little Bougainvillea that the woman thought would live without water? It died, of course, and I planted another, with a lesson on the fundamentals of plant growing to the woman, and a lesson from her to me, that those who have knowledge must be wise enough to share it with those who have little or none, and that, too, in a way that will make the recipient feel happy in the thought that they are acquiring information which will be helpful to them. The late W. Atlee Burpee was a master of this art of delightful instruction, and I hope the fellow will not feel uncomfortable, if I say to the readers of this Journal, that the Editor thereof, is another who radiates information as the sun radiates heat, and all who come within the influence are benefited.

PETER D. BARNHART.

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ists. Boskoop flowers are thus put on sale simultaneously in the London and Dutch shops. About 100 kilograms of flowers per day are to be transported in this way.

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The July & August Gardens

THE FLOWER GARDEN

While we are apt to think most of our choice flowers have bloomed, there is still plenty in the garden to need looking after, irrigating will require much of our time and very often just when we think we can begin to take things a little easier there comes the question of insect pests and the sprayer must be brought into use while the days are warm and nights are frequently cool and damp encouraging the aphids; a cold water spray with the hose can be used, and tobacco dust is very good.

This month plant mignonette, calendulas in the ground; you can put calendulas in some out of the way spot and transplant the little seedlings later, don't try to carry your old plants through, much better flowers can be gotten by using fresh stock. Mignonette does not transplant well and should always be sown where it is to bloom. Candytuft can be sown in the open to give bloom in the early fall. Make one or two sowings of Gyphsophila, about two weeks apart. This is one of the best times to sow Antirrhinum in boxes, transplant the little seedlings when they are just out of the seed leaf into another box putting them about two inches apart, keep the ground fairly moist. Snapdragons this year seem to have been unusually free from rust, not only with us but in all parts of the country from notes I have seen. Stocks, Campanulas, Columbines (get the long spurred hybrids) Foxgloves, Hollyhocks can all go into flats now. Cinerarias and Baby Primroses, Malacoides, should also be sown.

After reading all the Iris notes and Bulletins one wants to try a lot of them; we are safe I think in this locality in trying out most of those in the bulbous section—they seem to do well with us, and quite a number of the bearded type have been seen around town this past season with good blooms. Stylosa the winter bloomer has done well in and around Los Angeles and we ought to see more of them here—quite a number of dealers are offering limited quantities of the Spanish, the Dutch hybrids, and also the English bulbous ones, these latter are larger and bloom later than the Spanish.

Watch your Dahlias, do not let them lack for water, also fertilize and cultivate, likewise the Chrysanthemums and Zinnias—"Mums" usually come in too late for the Fall Show, but there are rumors of an especial Chrysanthemum afternoon or evening, so cultivate your plants and be ready.

MARY A. MATTHEWS.

THE VEGETABLE GARDEN

By Walter Birch

It is a good time now and later in the month to prepare such portions of your garden as are not at present in use for the fall garden. Apply a liberal coating of well-rotted stable manure, furrow out the land and run water for a sufficiently long time to thoroughly soak the ground to a depth of 2 or 3 feet. When dry enough to work spade to a depth of 10 to 12 inches and leave it in the rough for a week or ten days. Then turn on the water and spray long enough to meet the underlying moisture, and as soon as the surface is sufficiently dry cultivate and rake down fine for a good seed bed.

You can then plant for your fall and early winter vegetable garden, setting out such plants as cabbage, cauliflower, pepper and tomatoes. Sow some more carrots, turnips, radish and lettuce. Danver's Half Long Carrot, Purple Top White Globe Turnips and Los Angeles Market Lettuce are all good and either the long or round radish. Try some Long Standing Spinach, and make a planting of sweet corn, either Golden Bantam, Country Gentleman or Oregon Evergreen.

Sow some Golden Wax and Stringless Green Pod Beans for late crop.

The maturing crops in the early garden need close attention during the warm weather. Supply plenty of moisture and cultivate thoroughly, keeping a fine surface to prevent evaporation. Look out for insect pests in your melons, squash and cucumbers and if you notice any leaf eating insects at work use arsenate of lead. If you are troubled with aphids spray with Black Leaf 40.

You will find a mulch of well-rotted manure a great help in keeping the ground moist and in good condition and the occasional necessary sprinkling will carry some of the strength of the manure to the roots of the plants, thereby boosting them along.

Owing to the quicker maturing of vegetables during the summer heat, provided the necessary moisture is supplied you can still plant summer squash, cucumbers and melons. White Bush scalloped is a good squash and Klondyke Cucumber and Rocky Ford Musk Melon are both quick maturing varieties. If troubled with rust or mildew on your melons or squash use Bordeaux Mixture.

While it is getting late for setting out flowering plants, to those who have not been already supplied, if they get good, strong plants and will take extra trouble in supplying the necessary moisture and care they can still have success.

The California Garden

A. D. Robinson, Editor
Office, Roscroft, Point Loma, Cal.

PUBLISHED MONTHLY BY

The San Diego Floral Association

Main Office, Point Loma, California

OFFICERS AND DIRECTORS

A. D. Robinson, President.
Mrs. Mary A. Greer, Vice-President
Wm. P. Brothers, Treasurer
Miss Mary Matthews, Secretary
L. A. Blochman
John W. Morley Walter Birch

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EDITORIALY

"San Francisco recently changed its civil service law so that John McLaren, famed landscape expert and creator of the city's "Eden", the beautiful Golden Gate Park, would not have to retire when he became 70 years of age. In addition, his employers, the Board of Supervisors, voted him a 70th birthday present of a 50 per cent increase in salary.

Since 1887, soon after McLaren came here from Scotland, he has been park superintendent, and has converted what once was a dreary stretch of sand dunes into an alluring wilderness, noted throughout the world for its size and beauty. For years he and his wife have lived in a cozy lodge deep in a park recess.

Until changed, the law said that McLaren would have to go on the pension list and give up his lodge when he became 70. The supervisors changed the law to read that employees receiving over \$500 a month are exempt from retirement provisions and, to put McLearn within the law, increased his salary from \$500 to \$750.

McLaren handled the big task of landscaping the grounds of the Panama Pacific Exposition here in 1915 and in odd moments of recent years he wrote a book, "Gardening in California," which has become a standard textbook.

When McLaren first came to the park there were no lakes, few roads, few trees and scores of acres of sand dunes. He had 20 men on the payroll and thought if he could have 100 everything would be well. Now there are 300.

McLaren knows every tree, shrub and flower in the big park by all its names. Prac-

tically every growing thing in the big reservation was placed where it is by his personal direction. He located the bridges, waterfalls, miniature canyons, lakes and boulevards. He made the park what it is and San Francisco is satisfied.

Now at 70 years, McLaren is planning a new addition to the big park, giving him more acres to plant."

This is clipped bodily from the Daily Press in the belief and hope it may be true; all that concerns the works of John McLaren we know to be and very much more beside. We don't think the total of his years can be right because only yesterday, metaphorically speaking we made his acquaintance vouched for by another Scotchman who joined him in taking a glass of—water perhaps though we don't think so, while we ate Bannock cakes made by Mrs. McLaren, and then he was but a boy, or seemed so. We would like to say a lot more about McLaren, how he was a subscriber to this magazine when it started and still is, but it would seem to be a kind of basking in his glory and it would seem just what it really would be for thousands of people have known him better than ourselves and have more interesting reminiscences. Still we have the right to congratulate the folks of San Francisco for having done a gracious thing while serving themselves. It is unthinkable that any one alive or dead, the latter have to be included these days, could so effectively serve as Superintendent of Golden Gate Park as John McLaren its creator out of nothing but space and worse than nothing when the drifting sand condition is considered.

Not only are the San Franciscans to be congratulated but the American people that this one big job has been filled by one big man for forty-seven years and the two are not to be divorced even now. Excuse us if we say HURRAH!

Naturally while on this subject we think of our own Balboa Park and its marvellous development in the last decade with another John in charge Morley. Possibly some of you will be inclined to think you did it by voting the money and lest you should it is well to remind you that rock is a harder substance than sand to combat in a Park, and Balboa Park today represents beside money expenditure the use of courage and perseverance of a high order; Peter it is said built his house on a rock or was the Peter the rock we are sure there is a mixup somewhere, but John built a Park on a rock which would seem a bigger job.

We have been privileged this season to see the Japanese Iris in glory in the gardens of the Erskine J. Campbell residence at Point Loma and we hardly know what to say, the experience was so perfect that words especially cold printed ones are almost ridiculous. Thousands of blooms, many eight inches and

Patronize the Garden Advertisers.

more across in soft colors from white to deep purples in endless shadings, no reds, hardly any yellow, stood in big bouquets in delightful mudholes with stepping stones and cunningly crooked plank walks winding through them, or rather we should say among them, it sounds more intimate; and the setting for these ponds was a real Japanese garden, not an exotic plastered in the corner of a flat lot with artificial unevenness, but one that wound and curved and climbed and slid about a craggy cliff so little altered from what it was perhaps a thousand year ago that a delightful feeling of fitness pervaded everywhere. There is no space to describe any of this garden in detail we could not do it unless the owners and their understanding Japanese would spend a morning with us walking and sitting and standing around and of course talking, then we might get some atmosphere that would allow of speaking of the Buddha that sits upon his stone with a calm that invites things to grow, without irreverence. Perhaps some day we may have this blessed experience.

Our thanks are due and here freely offered to the San Diego Union for its kindly and extensive notices of the last two issues of The Garden. We hope we deserve all the nice things it said, but even if we did not, we are doing our damndest, and that is the most any one can do; and further, if our deserts don't measure up there is all the more call for thanks. Further we confess that these notices have brought us several new subscribers and we hope they will read this and remember what we say about the intensity of our efforts.

JUNE MEETING

The Annual Meeting for the year, June, 1921 to 1922, was held June 20th in the San Diego Club house. This is always a gala time with the members, and this year the meeting was certainly up to the record in fact exceeded some, there were in the neighborhood of one hundred and fifty present, this number, however, should have been doubled, attending the meeting is one good way to show your interest and loyalty to the association. A musical program was given for which the association is much indebted to Miss Gladys Page, who donated her services and gave some charming instrumental numbers and to Mrs. C. A. Minty for vocal solos, both added much to the pleasure of the evening. Harold A. Taylor took the audience on a back country trip with his wonderful color pictures, many of them never shown before, and they were enthusiastically received.

Reports were heard from the Secretary and Treasurer the latter being more vital at this time will probably be given in full, following the President gave a most excellent talk reviewing the work in the past and plans for

the future, at the close the election of Directors for the coming year was taken up. While the balloting was being done Mrs. Blochman and her assistants served delicious punch, memberships were received, also subscriptions for the El Monte Oaks fund.

The following Directors were elected by a majority vote: Alfred D. Robinson, John Morley, L. A. Blochman, W. P. Brothers, Walter Birch, Mrs. Mary A. Greer, Miss Mary A. Matthews.

Respectfully submitted,
MARY A. MATTHEWS, Secretary.

The floral decorations, also distribution of plants deserve special mention. Mr. Morley and Miss Sessions were in charge of the decorations for the club house and it never was more beautiful than in its color scheme of white, green and gold. F. A. Bode, The Harris Seed Co. and Miss Sessions contributed plants for distribution, Mr. Robinson also sent a few choice Begonias. The Flower Shop, Boyle & Darnaud and Geo. Otto sent beautiful baskets, Miss Helena Flint a fine lot of seeds properly marked and done up in packets, Mr. Cushman of Point Loma staged one of the largest collections of *Gladiolus* that has ever been shown in San Diego, all were given away—Miss Sessions brought down a very interesting lot of wild flowers from Wildwood Glen.

The Board of Directors met shortly after the Annual Meeting for organization with the following result: President, Alfred D. Robinson; Vice-President, Mrs. Mary A. Greer; Secretary, Miss Mary A. Matthews; Treasurer, W. P. Brothers.

AUGUST OUTDOOR MEETING

Tuesday, August First.

The Floral Association will hold its August afternoon meeting at Rosecroft, the Point Loma residence of Mr. and Mrs. Alfred D. Robinson. The lathhouse there is said to be fully up to its average and Begonia specialists will be well repaid for the trouble of going.

Those taking the street car should do so between two and three, alighting at the Roseville junction where, it is hoped, autos will meet them, but as a safety first measure it would be well to arrange for individual motor transport. Athletes in good condition can essay the walk up the hill from La Playa, but they do it at their own risk.

AUGUST REGULAR MEETING

The Evening of August 15th.

The Floral Association will hold its regular monthly meeting with Mrs. Maud Frary at her residence, 2166 Park avenue, corner of Sixth and Ivy. The subject for discussion will be "Seed Planting for Winter Blooms". John Morley will be asked to talk but if he won't some one else will. No disappointment guaranteed.

THE MODERN ZINNIAS

By Horace G. Keesling

(In San Jose (Calif.) Mercury)

Those of us who are familiar with the old-fashioned Zinnias of our boyhood and girlhood days can realize more fully than any one else the wonderful changes that have occurred in the development of this common garden flower for about the best that could have been said of them in the beginning might be that they are better than no flowers in spite of their stiffness and indifferent coloring.

From the dull unattractive Zinnia of early times with its very limited range of color the modern Zinnia has sprung, overnight as it were, a race of vigorous garden flowers with attractive foliage and flowers of large size that in vivid and clear colors are bidding for favor with some of our choicest possessions.

The Points of Good Zinnias

Fortunate is he who can walk with Burbank in his garden and gather wisdom from his every word and gesture as he calls attention to the merits of this flower that has a band around its neck that signifies its selection for seed bearing, or to the faults of another in his trial rows that means its elimination. Stopping in the midst of the blazing Zinnias and calling attention to a number of extra fine specimens in size, form and coloring Mr. Burbank remarked: "Twenty-five cents worth of Zinnia seed may produce more fine flowers than twenty-five dollars worth of Dahlia bulbs.

Plainly his remark was not intended to be detrimental to the very desirable Dahlias of the present day but rather to emphasize the great returns in quantity and quality of flowers a little money will bring.

Size is not all that is desirable in Zinnias for some of the largest may lack good form or distinctive color and sometimes an otherwise desirable flower will be accompanied by poor foliage. Colors that are clear and distinctive are perhaps the greatest factors in popularizing this formerly very ordinary flower and while so many of the new types are very desirable the recent great improvements foretell that we may very reasonably look for still more beautiful Zinnias in the years to come.

Desirability of Zinnias

While individual taste must decide on the varieties of flowers to plant in one's garden there are often points of merit and possibilities for use that help to decide. With other points equal in importance the flower that is lasting and a continuous bloomer in the garden and at the same time will maintain its beauty for a long time when cut has the strongest appeal to the flower lover, and this is especially true when space for planting is limited.

Zinnias can claim a high degree of excellence for both garden decoration and for cut

flowers. The blooms, as well as the foliage, withstand the elements of wind, rain, and hot sunshine almost perfectly and are therefore desirable to plant where exposure is greatest and maintain the decorative effect when many other garden flowers would be seriously injured.

For cutting they top the list in endurance even under the greatest neglect. They are without competition for those who must economize when lack of space forbids large planting or the amount to be expended for flowers is limited since their lasting quality bridges over the flight of time.

Great Range of Colors

While the Zinnia of long ago was limited to only a few colors the newest productions have quite an extended range. Some of the colors noted in Mr. Burbank's fine collection included the white, yellow, orange, pink, rose and scarlet as well as golden yellow, burnt orange, old rose, cerise, mauve, crushed strawberry, terra cotta, rose pink, tyrian rose and other varying shades of color.

The Culture of Zinnias

While ease of culture is not always of serious importance it is generally a source of satisfaction to know that some flower that is beautiful and appeals particularly to one's taste, is also free from the fastidious requirements that must be observed to successfully grow some other desirable kinds. Ease of culture is an outstanding merit of the whole Zinnia family.

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The FLOWER SHOP



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Seed should be obtained of some seedsman who can furnish the latest and best mixtures, for at present particular or named varieties are not well established and are too apt to come untrue.

Sow the seeds in flats in greenhouse or hotbed if early blooming is desired, and transplant in other flats or in sheltered border to prevent running up until time to plant where they are to bloom. The sowing of seed in the open ground is also entirely practical and the plants may be thinned if too thick and transplanted to other locations.

Zinnias bloom all summer if given proper care. To obtain flowers of large size in abundance the plants must be given ample room for full development. They delight in fertile garden soil and will then develop sturdy flower stalks, richly colored foliage and blooms that will be a source of delight to all who see them.

THE ROSE

By E. Benard

General directions for this month are much as last, except special care must be taken to keep off suckers from budded bushes and any pruning should be with an eye to growing and saving good wood for next year. This wood for next year is to serve as a base for operations as roses bloom on new wood, but this new wood must have good, healthy, vigorous matured stock from which to start. Don't imagine there is plenty of time for this, for it takes months for the big shoots to turn from soft pithy condition to firm hard wood and the late comers will not do this. Returning to suckers which can be identified easily from coming out of the ground and having a different leaf, they should be pulled off with a vigorous jerk as cutting will only cause branching, the jerk, if done right, pulls them off at their starting point. It is not easy to describe the right kind of jerk but the direction of the pull is important so if one jerk fails try another the opposite way.

Water at least once during the month but don't try to stimulate growth, you are not after blooms with the sun so fiercely on the job.

Almost every rose fancier wants to try budding and now is a good time. The first requisite for success is that both bud and stock are in proper condition this is shown by the bark slipping off the wood easily and will be found shortly after a good watering. Yearling wood is old enough for stock, if a straight, single stem put in two buds one on each side at height desired. If older bud on side growths near main stem. This applies to standard or tree roses. Bush roses are budded on stock just below the surface of the ground and then covered over. The ordinary shield bud is a thin piece of bark and wood having a bud not actually pushing but

well developed, the whole about three quarters of an inch long, the best place to get these is towards the base of a stalk that has flowered, the bottom and top ones are not so good. This bud is slipped under the bark by means of a cross cut with a downward slant and a slit from the middle of this, the bark can be loosened with the point of the knife or the fingernail. If the leaf stem be left on the bud it serves as a handle to introduce the bud. When in, the bud must be tied with raffia or something similar beginning at the top and working down getting an even pressure like a bandage. In two to six weeks the bud will start or it won't, and after a growth of four inches should be pinched back to insure a strong juncture between bud and stock and when well established the stock can be headed back to the bud, but this should not be done too hurriedly. During the whole operation the stock will continually try to grow on its own, but buds should be rubbed off as they appear, particularly below the bud inserted. Any book on nursery work will give illustrations of budding and make the process much clearer than word description can. Stock used for budding in this state are Rosa Canina, Manetti, Banksia and Climbing Cecil Bruner.

CULTURE OF DELPHINIUMS

A request has been lodged for information about Delphiniums, so the following is clipped bodily from the catalogue of Blackmore and Langdon, the great English specialists, who list over seventy named varieties that grow from three to seven feet tall and range in color from white to deep purple picking up on the way everything in blues and lavenders and an occasional yellow:

"Like every other plant, the Delphinium well repays good cultivation, and for that reason the soil should be well and deeply dug, and liberally manured with well decomposed animal manures. On light and well-drained warm soils we strongly advocate autumn planting from third week in August to the first week in November, giving the preference to September. On heavy and cold wet soils it will be safer to defer planting until early March up to first week in April. When the spikes are growing rapidly, copious supplies of water should be given if weather is dry, and occasional waterings with weak liquid manure will benefit the plants considerably giving increased size of flower and length of spike and generally improving the color and brilliancy of the flowers. Slugs and snails are the greatest enemies of Delphiniums, and the best plan to prevent their attacks, is to place a good covering of sharp cinder ashes over the crown in early autumn. When well established, spikes should be thinned when three or four inches high, and if extra large specimen spikes are required,

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NEW OR RARE PLANTS

By D. W. Coolidge.

I am sure it is true that when one becomes interested in any kind of collections—when one makes a hobby of anything—and right here let me say that the person who does not have a hobby of some kind, misses the biggest joy in life, the more uncommon and rare specimens he can obtain, furnish the most joy to him, and makes his collection more interesting to his guests.

Plants have been my hobby for—I won't say how long, because that would be giving my age away, and I wish my San Diego friends to remember me as a young man—anyway it has been my hobby all my life, and the older I grow, the more I begin to realize what an exhaustless field, horticulture in all its branches embraces.

I promised Mr. Robinson to send him a short paper describing some of the newer and more interesting of the new or rare plants in my collection, and herewith name a few of them.

The evergreen barberries have always impressed me as most desirable garden shrubs. They are beautiful in foliage and flower, and very attractive when laden with their blue, purple, or red fruits.

About 1912, a number of new ones were introduced from China.

Berberis Gagnipani has foliage somewhat like *Berberis Darwinii*, but larger and grows much more rapidly. Its flowers are of a lighter color than *Darwinii*, but quite beautiful. *Berberis Sargentii* has dark foliage of a most beautiful lustre, and is bound to become popular when known. *Berberis tricanthophora* is a particularly attractive shrub. Its long, narrow leaves are very distinct from the other species, and its pinkish yellow flowers are most noticeable. *Berberis verucolosa*, *Berberis Knightii*, *Berberis pruniformis* and *Berberis Jamiesonii*, are all very distinct in habit of growth, from the more common sorts.

Perhaps the one family of plants that has interested me more than any other for the last few years, is the Ericas or Heathers. The general public thinks of heathers as being solely of Scotch origin, when as a matter of fact, the Northern or Scotch heathers are rarely seen, and for the good reasons that they do not succeed, and are far less interesting than the Mediterranean, South African and Australian heathers.

Among the more beautiful of the large flowered varieties, are *Erica Charlesiana*, a delicate pink; *Erica Bowiana*, a pure white; *Erica perspicua erecta*, a salmon pink; *Erica Pres. Felix Faure*, red and white; and *Erica Cavendishi*, a golden yellow. The later species, I have been endeavoring for years to obtain, and the nearest I have to it now are some cuttings that give promise of rooting.

Two ericaceous plants that go under a different generic name, that I consider of great value are *Menzesia Polifolia alba*, and *Menzesia rosea*. These are low compact growing plants that rarely ever grow over a foot high. They produce for a long period, stalks of typical lily-of-the-valley flowers of both snow white and lilaceous pink. *Erica Regerminans* has flowers something like *Melanthera* but the plant is a more constant bloomer, and is desirable from every standpoint. Another branch of the *Erica* family are the *Callunas* which are low growing, or prostrate. They are beautiful for both foliage and flowers. I have observed no shrub of recent introduction that is so showy as *Grevillea Banksii*. In your San Diego region, and sections of little frost, this plant can be said to be constantly in flower, and its large carmine red blossoms, almost a plume, is so noticeable and beautiful as to attract every attention. It has large pinnate leaves not unlike the common tree, *Grevillea robusta*, but the plant is manifestly but a shrub.

There are some new evergreen hawthornes, now generally termed *Pyracantha*, that are extremely worth while. *Pyracantha yunnanensis* is a very quick growing large shrub, entirely evergreen, and perhaps the most conspicuous of the berry-bearing plants. Its wonderful masses of brightest holly-red berries are very persistent, bearing ordinarily from October to January. *Pyracantha Forsmosiana* has most attractive small foliage, and has the reputation of producing attractive fruits.

A trailing pink *Daphne* with the fragrant flowers of the larger shrub, is *Daphne cneorum*. A most beautiful rockery plant.

A very rare small tree or large shrub is *Pyrus kawakami*, a true evergreen pear. I was much surprised to observe that during our past extreme winter, this plant did not lose a leaf, but took on most gorgeous coloring. I am thoroughly convinced that this only known evergreen pear is destined to figure in our future fine plantings.

At a later date, if it is desired, I will furnish another list of rare ornamentals that we have under observation. Many of which are plants of great promise.

If you have for sale commodities or service of interest to owners of gardens you are losing business every day your advertising does not appear in the California Garden.

JONATHAN JACOB AND HIS HOUSE

Dear Gardeners:

Now Jonathan Jacob has been with us for seven years and I feel that he deserves mention in the California Garden. Surely any one remaining faithful for seven years in this fickle, restless age deserves to be written up. By this time you may wonder who Jonathan Jacob is? Well he lives in a small house 9x7 (inches, not feet,) and said house has a front porch, one door, two windows and a chimney and all this is located in a corner of our lath garden and on top of a post about five feet tall. But still I haven't told you WHO he is. Jonathan Jacob is a tree frog just an inch long and weighing almost nothing, stripped for gym. Of course he is very small in comparison with the size of his name or his name is very large in comparison with the size of him—which ever way you want to make the comparison, but his name was given to him in recognition of his spirit and not his body. The first name was given to him because time proved him to be a good friend and the second name was given to him this spring because he has worked for us seven years and still has no wife.

But I now go back to start at the first of the story. Several years ago we made a small bird house, as enticing looking as possible, and set it up upon a big oak post in our lath garden. We also put a little sign upon the post which read "To Rent for a Song." A few days later we were delighted to discover that a happy pair of little brown birds were carrying straws inside preparatory to setting up housekeeping. Early the second morning after this I noticed a commotion at the front porch of the bird house. There was much excited bird talk and seemingly a great dissatisfaction about something. I left my window and hurried forth to the garden and peered within the small door of the bird bungalow. There behind the straws, far back in one corner sat a bright-eyed little tree frog. He blinked at me and I blinked at him and then I went back to my window to watch the course of events.

The two birds hung about the front porch of the bungalow. They argued, they persuaded, they reviled and doubtless the man bird used strong language, but the bright-eyed little frog sat quietly in his corner and blinked his eyes and said nothing. Realizing the truth of the statement that "possession is nine points in law" and seeing that all their efforts were unavailing the two brown birds gave up in disgust and soon left on their hunt for another bungalow or apartment.

Jonathan Jacob had full possession of the cute little bungalow in the lath garden and for seven years he has kept it. Of course by this time we have become well acquainted with him and our lath garden, beautiful as it is, would not seem complete without Jonathan Jacob.

I may say that when Jonathan Jacob first took up his abode in the bird house I was somewhat disappointed. Of course when I advertised by the sign on the post that I would rent the house "for a song" I never dreamed of making a bargain with anyone but a pair of birds. But you see what contingencies will arise in affairs of business when one is not careful and definite and specific in his or her statements. Jonathan Jacob claimed that he came up to the qualifications required by the sign. What if he did pour forth his song at night? I had not specified that the song was to be sung in the day time. Neither had I stated that it must be bird song nor had I said a word as to the quality of the singer's voice. I agreed with him that he was taking a stand entirely within his rights and then and there I learned a lesson as to being definite in future advertising. So Jonathan Jacob continued his residence in the bungalow built for birds and I will say that if all tenants were as regular and as honorable in paying their rents as we have found Jonathan Jacob to be no landlords would ever have to resort to the courts and neither would they ever have to be forced to set their tenant's goods and chattels out upon the sidewalk.

Every night Jonathan Jacob sings his song. Of course I had counted on having a silvery-throated songster residing in the garden bungalow, one who would trill and carol to me in the golden mornings. Instead, I hear in the silent watches of the night Jonathan Jacob paying for his rent with a song in a high cracked voice. But at least it can be said of him that he makes the most of his talents and opportunities and does the best that he can. Then, too, as is often the case with a bad bargain, if one keeps his word and hopes for the best, I feel that I have come out ahead anyway. For you see Jonathan Jacob has boarded entirely in our lath garden and has made a practice of destroying the many bugs that otherwise would have ruined my precious ferns and rare begonias. Late each evening when the shadows are just cool enough to suit him he comes out of his little house, sits upon his front porch a few moments and enjoys his elevated view, then climbs slowly down the big post upon which his house sits and all during the long night he makes the tour of the lath garden and fills himself up on bugs, and sings alternately.

Each morning about eight o'clock Jonathan Jacob may be seen shinning back up his post and upon arriving at his front porch he sits there calmly resting himself for ten or fifteen minutes as he watches me work among the lath garden flowers, and peers wisely down at the goldfish in the pool. Then he yawns, stretches first one hind leg and then the other and slowly walks in through his little door and backs up into the southeast corner of his bungalow and he is settled for the day. Sometimes when I come out into the garden

in the early morning and find Jonathan Jacob sitting on his front porch and looking unusually slim as if the night's hunting had not been up to standard I get busy and move a few flower pots and boxes around and collect some small bugs and offer them to him one at a time. He seems delighted at such attentions and sticks out a tongue so long that I wonder where on earth he keeps it in so small a body. But he licks in the bugs on his lightening like tongue and smacks his mouth with enjoyment and blinks his eyes at me to express his thanks.

At the present time we are in a great dilemma. You see Jonathan Jacob's cottage is sadly in need of painting. At the very least it would take several days to get it painted and dry again and during that time he might get insulted at us removing his house and he might leave. Or again even if he were willing to hide out under a begonia leaf for a few days during house cleaning time, then his aesthetic senses might rebel at the odor of the fresh paint which is so lingering and he might refuse to inhabit the rejuvenated old home. Yes, it's quite a dilemma, but we have about decided on the way out of it. We think we are going to make a lovely new house for him and have it stained brown with white roof and trimmings and bright red chimney—just an exact replica of the one which was so spick and span seven years ago when Jonathan Jacob took up his abode with us. Then when the paint is thoroughly dry we shall substitute the new for the old cottage very early some morning and then watch to see if Jonathan Jacob accepts it gracefully. But should he show the slightest sign of disapproval we shall promptly return his weather-beaten old bungalow to its place upon his post and let him continue enjoying it, for after all, what's a little bit of paint between friends?

PEARL LA FORCE MAYER.

CULTURE OF DELPHINIUMS

Continued from page 9

three or four, or less in some cases, are sufficient to remain. It is necessary to see that the growth are staked in time to prevent damage by wind."

The Delphiniums in this locality are apt to be biennial instead of perennial. They will bloom the first year from seed if started early though the better plants are obtained from later sown seed waiting for the blooms till the next year, as like so many other things they prefer our spring weather. In raising Delphiniums from seed they should be put in the open ground as soon as possible and not crowded, their root action being large almost from the start. It cannot, however, be said that they are quite happy with us, their popularity being fitful, another high wave seems to be coming and one Northern enthusiast regards lime as the panacea for all Delphinium ills.

LISBON'S FLOWER FEAST

The Feast of the Flowers in Lisbon fell this year on the hottest day that any man in the city can remember. Hundreds of children with colored handkerchiefs bound round their heads and blistered feet, tramped out into the surrounding country, and came back at mid-day with baskets of flowers slung over their shoulders. Roses, carnations and a host of wild blooms were sold in every street, and the market was open till evening.

The heat was so intense that those who could afford the time journeyed to Esteril in the afternoon to spend a few hours on the Riviera of Portugal. Esteril is a place of stone walls, small chalets and cork trees, with the most wonderful shore on the coast. Cactus and palm trees grow along the sands. Flowers were even sold here during the feast, though every wall is hidden in a thick mass of geraniums. It is the center of the British colony, and towards evening the beach is crowded with bathers.

The people of Lisbon stopped all work in the city soon after five, and spent the night dancing in the streets or singing to the accompaniment of the guitar.

As dusk fell watchers seemed to spy on strangers from almost every window. The Portuguese turn out the lights of their house after supper and lean out over the window sills watching the passers-by with marked suspicion. The higher one climbs up the hills the more sordid do the streets become.

In the Rua Ferea little clusters of men and women stood around the caves that serve as shops. These caves run back for some 30 yards, and the far wall is hidden by hundreds of wine bottles. There are often three large wooden casks placed side by side in the front, and a few wooden chairs on a floor covered with sawdust. On the night of the feast hordes of almost naked children were dancing outside these caves to the tune of a guitar.

Guitars re-echoed all over the hills. Bands of men wandered through the streets plucking strings and others stood in groups singing to the music. People had flocked up to the gardens of Graca, where the cool sea-breezes blew from all over the city. Here one can lean over a long, low balcony and see the whole city, built on its two great hills, below, and to the right the hills are a mass of sparkling lights.

Everybody wore flowers on that evening in the gardens of Graca, but the scent of the honeysuckle was stronger than anything else. A little group of boys with guitars played there until the early hours of the morning, while a large Portuguese in a pointed woolen cap sang the song of the feast in a low, plaintive tone.

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